



## General

### Guideline Title

American Academy of Orthopaedic Surgeons appropriate use criteria for the management of osteoarthritis of the hip.

### Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons appropriate use criteria for the management of osteoarthritis of the hip. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2017 Dec 8. 162 p. [4 references]

### Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

### NEATS Assessment

National Guideline Clearinghouse (NGC) has assessed this guideline's adherence to standards of trustworthiness, derived from the Institute of Medicine's report [Clinical Practice Guidelines We Can Trust](#).

█ = Poor   █ = Fair   █ = Good   █ = Very Good   █ = Excellent

Assessment	Standard of Trustworthiness
YES	Disclosure of Guideline Funding Source
█	Disclosure and Management of Financial Conflict of Interests
	Guideline Development Group Composition
YES	Multidisciplinary Group
YES	Methodologist Involvement

	Patient and Public Perspectives
	<b>Use of a Systematic Review of Evidence</b>
	Search Strategy
	Study Selection
	Synthesis of Evidence
	<b>Evidence Foundations for and Rating Strength of Recommendations</b>
	Grading the Quality or Strength of Evidence
	Benefits and Harms of Recommendations
	Evidence Summary Supporting Recommendations
	Rating the Strength of Recommendations
	<b>Specific and Unambiguous Articulation of Recommendations</b>
	<b>External Review</b>
	<b>Updating</b>

## Recommendations

### Major Recommendations

#### Assumptions of the Writing Panel/Voting Panel

Before these appropriate use criteria (AUC) are consulted, it is assumed that:

Arthroplasty as a treatment option means total hip arthroplasty, occasionally resurfacing, rarely hemiarthroplasty or hip resection arthroplasty (girdlestone procedure).

Hip preservation as a treatment means periacetabular or femoral osteotomy for hip dysplasia or deformity and arthroscopic or open surgery for femoroacetabular impingement and/or labral tears.

Modifiable risk factors may include, but are not limited to: patient obesity, mental health disorders, tobacco use, or uncontrolled diabetes.

Surgical treatment should only be considered following dissatisfaction with appropriate nonoperative treatments.

#### Results of Appropriateness Rating

The AUC tables (see pages 20-155 in the original guideline document) contain the final appropriateness ratings assigned by the members of the voting panel. Patient characteristics are found under the column titled "Scenario." The AUC for each patient scenario can be found within each of the treatment rows. These criteria are formatted by appropriateness, median rating, and + or - indicating agreement or disagreement amongst the voting panel, respectively.

## Clinical Algorithm(s)

None provided

## Scope

### Disease/Condition(s)

Hip osteoarthritis

### Guideline Category

Management

Risk Assessment

Treatment

### Clinical Specialty

Family Practice

Geriatrics

Orthopedic Surgery

Physical Medicine and Rehabilitation

### Intended Users

Advanced Practice Nurses

Health Care Providers

Health Plans

Hospitals

Managed Care Organizations

Occupational Therapists

Physical Therapists

Physician Assistants

Physicians

Utilization Management

### Guideline Objective(s)

To help determine the appropriateness of clinical practice guideline recommendations for the heterogeneous patient with hip osteoarthritis routinely seen in practice

## Target Population

Adult patients with osteoarthritis of the hip

Note: This appropriate use criteria does not provide recommendations for patients diagnosed with rheumatoid arthritis, osteoarthritis of other joints, or other inflammatory arthropathies.

## Interventions and Practices Considered

1. Risk factor assessment and optimization
2. Activity modification
3. Assistive devices
4. Oral medication management
  - Non-opioid (nonsteroidal anti-inflammatory drugs [NSAIDs], acetaminophen)
  - Tramadol
5. Intraarticular steroids
6. Physical therapy (as conservative treatment)
7. Arthroplasty
8. Hip preservation surgery
9. Arthrodesis

## Major Outcomes Considered

- Mobility and ambulation
- Level of care and supervision
- Quality of life

## Methodology

### Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

### Description of Methods Used to Collect/Select the Evidence

The 2017 Clinical Practice Guideline on the Management of Osteoarthritis of the Hip was used as the evidence base for this appropriate use criteria (AUC). This guideline helped to inform the decisions of the writing panel and voting panel where available and necessary. See the clinical practice guideline for the search strategy (Appendix V) and study selection criteria (see the "Availability of Companion Documents" field).

## Number of Source Documents

97 articles were included after full text review and quality analysis in the clinical practice guideline.

## Methods Used to Assess the Quality and Strength of the Evidence

## Rating Scheme for the Strength of the Evidence

For information on how the quality of data was evaluated, see the American Academy of Orthopaedic Surgeons (AAOS) guideline on management of osteoarthritis of the hip (see the "Availability of Companion Documents" field).

## Methods Used to Analyze the Evidence

Systematic Review with Evidence Tables

## Description of the Methods Used to Analyze the Evidence

The purpose of this appropriate use criteria (AUC) is to help determine the appropriateness of clinical practice guideline recommendations for the heterogeneous patient population routinely seen in practice. The best available scientific evidence is synthesized with collective expert opinion on topics where gold standard randomized clinical trials are not available or are inadequately detailed for identifying distinct patient types. When there is evidence corroborated by consensus that expected benefits substantially outweigh potential risks, exclusive of cost, a procedure is determined to be appropriate. The American Academy of Orthopaedic Surgeons (AAOS) uses the Research and Development/University of California, Los Angeles (RAND/UCLA) Appropriateness Method (RAM). The process includes these steps: reviewing the results of the evidence analysis, compiling a list of clinical vignettes, and having an expert panel comprised of representatives from multiple medical specialties to determine the appropriateness of each of the clinical indications for treatment as "Appropriate," "May be Appropriate," or "Rarely Appropriate."

## Methods Used to Formulate the Recommendations

Expert Consensus (Delphi)

## Description of Methods Used to Formulate the Recommendations

The American Academy of Orthopaedic Surgeons (AAOS) uses the Research and Development/University of California, Los Angeles (RAND/UCLA) Appropriateness Method (RAM).

Two panels participated in the development of the osteoarthritis (OA) HIP appropriate use criteria (AUC). Members of the writing panel developed a list of 270 patient scenarios, for which nine treatments were evaluated for appropriateness. The voting panel participated in two rounds of voting. During the first round of voting, the voting panel was given approximately two months to independently rate the appropriateness of each the provided treatments for each of the relevant patient scenarios as 'Appropriate,' 'May Be Appropriate,' or 'Rarely Appropriate' via an electronic ballot. After the first round of appropriateness ratings were submitted, AAOS staff calculated the median ratings for each patient scenario and specific treatment. An in-person voting panel meeting was held in Rosemont, IL on Saturday, September 16, 2017. During this meeting voting panel members addressed the scenarios/treatments which resulted in disagreement (definition of disagreement can be found in Table 3 in the original guideline document). The voting panel members discussed the list of assumptions, patient indications, and treatments to identify areas that needed to be clarified/edited. After the discussion and subsequent changes, the group was asked to rerate their first-round ratings during the voting panel meeting, only if they were persuaded to do so by the discussion and available evidence. The voting panel determined appropriateness by rating treatments for the various patient scenarios (i.e., criteria) as "Appropriate," "May Be Appropriate," or "Rarely Appropriate." There was no attempt to obtain consensus about appropriateness.

## Developing Criteria

Panel members of the OA HIP AUC, who are orthopaedic specialists in treating hip-related injuries/diseases, developed clinical scenarios using the following guiding principles:

- Patient scenarios must include a broad spectrum of patients that may be eligible for treatment of osteoarthritis of the hip [*comprehensive*]
- Patient indications must classify patients into a unique scenario [*mutually exclusive*]
- Patient indications must consistently classify similar patients into the same scenario [*reliable, valid indicators*]

The writing panel developed the scenarios by categorizing patients in terms of indications evident during the clinical decision-making process (see Figure 1 in the original guideline document). These scenarios relied upon definitions and general assumptions, mutually agreed upon by the writing panel during the development of the scenarios. These definitions and assumptions were necessary to provide consistency in the interpretation of the clinical scenarios among experts voting on the scenarios and readers using the final criteria.

### Formulating Indications and Scenarios

The AUC writing panel began the development of the scenarios by identifying clinical indications typical of patients commonly presenting with osteoarthritis of the hip in clinical practice. Indications are most often parameters observable by the clinician, including symptoms or results of diagnostic tests. Additionally, "human factor" (e.g., activity level) or demographic variables can be considered.

Indications identified in clinical trials (derived from patient selection criteria) included in AAOS Clinical Practice Guidelines served as a starting point for the writing panel and ensured that these Appropriate Use Criteria referred to the evidence base for the Management of Osteoarthritis of the Hip CPG. The writing panel considered this initial list and other indications based on their clinical expertise and selected the most clinically relevant indications (see Table 4 in the original guideline document). The writing panel then defined distinct classes for each indication to stratify/categorize the indication (see Table 4 in the original guideline document).

The writing panel organized these indications into a matrix of clinical scenarios that addressed all combinations of the classifications. The writing panel was given the opportunity to remove any scenarios that rarely occur in clinical practice, but agreed that all scenarios were clinically relevant. The major clinical decision-making indications chosen by the writing panel divided the matrix of clinical scenarios into chapters, as follows: function-limiting pain, range of motion extension/flexion, functional instability, pattern of arthritic involvement (medial tibiofemoral, lateral tibiofemoral or patellofemoral), imaging (joint space in most involved compartment), limb alignment, mechanical symptoms (compatible with meniscal tear or loose body), and age.

### Creating Definitions and Assumptions

The OA HIP AUC writing panel constructed concise and explicit definitions for the indications and classifications. This standardization helped ensure the way that the writing panel defined the patient indications was consistent among those reading the clinical scenario matrix or the final criteria. Definitions drew explicit boundaries when possible and were based on standard medical practice or existing literature.

Additionally, the writing panel formulated a list of general assumptions in order to provide more consistent interpretations of a scenario (see "Assumptions of the Writing Panel" in the "Major Recommendations" field). These assumptions differed from definitions in that they identified circumstances that exist outside of the control of the clinical decision-making process.

Assumptions also addressed the use of existing published literature regarding the effectiveness of treatment and/or the procedural skill level of physicians. Additionally, assumptions highlighted intrinsic methods described in this document such as the role of cost considerations in rating appropriateness or

the validity of the definition of appropriateness. The main goal of assumptions was to focus scenarios so that they apply to the average patient presenting to an average physician at an average facility.

The definitions and assumptions should provide all readers with a common starting point in interpreting the clinical scenarios. This list of definitions and assumptions accompanied the matrix of clinical scenarios in all stages of the development of this AUC and appears in the "Assumptions of the Writing Panel" section of the "Major Recommendations" field.

#### Voting Panel Modifications to Writing Panel Materials

At the start of the in-person voting panel meeting, the voting panel was reminded that they can amend the original writing panel materials if the amendments resulted in more clinically relevant and practical criteria. To amend the original materials, the voting panel members were instructed that a member must make a motion to amend and another member must "second" that motion, after which a vote is conducted. If a majority of voting panel members voted "yes" to amend the original materials, the amendments were accepted.

#### Determining Appropriateness

##### Voting Panel

A multidisciplinary panel of clinicians was assembled to determine the appropriateness of treatments for the OA HIP AUC. A non-voting moderator, who is an orthopaedic surgeon, but is not a specialist in the treatment of osteoarthritis of the hip, moderated the voting panel. The moderator was familiar with the methods and procedures of AAOS Appropriate Use Criteria and led the panel (as a non-voter) in discussions. Additionally, no member of the voting panel was involved in the development (writing panel) of the scenarios.

The voting panel used a modified Delphi procedure to determine appropriateness ratings. The voting panel participated in three rounds of voting while considering evidence-based information provided in the literature review. While cost is often a relevant consideration, panelists focused their appropriateness ratings on the effectiveness of treatments for osteoarthritis of the hip.

##### Rating Appropriateness

When rating the appropriateness of a scenario, the voting panel considered the following definition:

"An appropriate treatment for osteoarthritis of the hip is one for which the treatment is generally acceptable, is a reasonable approach for the indication, and is likely to improve the patient's health outcomes or survival."

They then rated each scenario using their best clinical judgment, taking into consideration the available evidence, for an average patient presenting to an average physician at an average facility as follows:

##### Interpreting the 9-Point Appropriateness Scale

Rating	Explanation
7-9	Appropriate: Appropriate for the indication provided, meaning treatment is generally acceptable and is a reasonable approach for the indication and is likely to improve the patient's health outcomes or survival.
4-6	May Be Appropriate: Uncertain for the indication provided, meaning treatment may be acceptable and may be a reasonable approach for the indication, but with uncertainty implying that more research and/or patient information is needed to further classify the indication.
1-3	Rarely Appropriate: Rarely an appropriate option for management of patients in this population due to the lack of a clear benefit/risk advantage; rarely an effective option for individual care plans; exceptions should have documentation of the clinical reasons for proceeding with this care option (i.e., procedure is not generally acceptable and is not generally reasonable for the indication).

Each panelist uses the scale below to record their response for each scenario:

#### *Appropriateness of [Topic]*

Rarely Appropriate: 1, 2, 3

May Be Appropriate: 4, 5, 6

Appropriate: 7, 8, 9

#### Round One Voting

The first round of voting occurred after completion of the independent review of the scenarios by the review panel and approval of the final indications, scenarios, and assumptions by the writing panel. The voting panel rated the scenarios electronically using a personalized ballot created by AAOS staff using the AAOS AUC Electronic Ballot Tool. There was no interaction between panel members while completing the first round of voting. Panelists considered the following materials:

The instructions for rating appropriateness

The completed literature review, that is appropriately referenced when evidence is available for a scenario

The list of indications, definitions, and assumptions, to ensure consistency in the interpretation of the clinical scenarios

#### Rounds Two and Three Voting

The second round of voting occurred during the in-person voting panel meeting on August 5, 2016. Before the in-person meeting started, each panelist received a personalized document that included their first-round ratings along with summarized results of the first-round ratings that resulted in disagreement. These results indicated the frequency of ratings for a scenario for all panelists. The document contained no identifying information for other panelists' ratings. The moderator also used a document that summarized the results of the panelists' first round voting. These personalized documents served as the basis for discussions of scenarios which resulted in disagreement.

During the discussion, the voting panel members were allowed to add or edit the assumptions list, patient indications, and/or treatments if clarification was needed. They were also asked to record a new rating for any scenarios/treatments, only if they were persuaded to do so by the discussion and/or the evidence. There was no attempt to obtain consensus among the panel members.

Upon completion of the second round of voting, AAOS staff and moderators used the AAOS AUC Electronic Ballot Tool to again identify any statistical disagreements. After discussing these again, and at the request of the voting panel, the ballots were opened for a third round of voting. No voter was forced to participate in this round of voting and there was no attempt to obtain consensus among the panel members. After the final ratings were submitted, AAOS staff used the AAOS AUC Electronic Ballot Tool to export the median values and level of agreement for all voting items.

#### Final Ratings

Using the median value of the third-round ratings, AAOS staff determined the final levels of appropriateness. Disagreement among raters can affect the final rating. Agreement and disagreement were determined using the BIOMED definitions of Agreement and Disagreement, as reported in the RAND/UCLA Appropriate Method User's Manual, for a panel of 11-13 voting members (see Table 2 in the original guideline document). The 11-13 panel member disagreement cutoff was used for this voting panel. For this panel size, disagreement is defined as when  $\geq 4$  members' appropriateness ratings fell within the appropriate (7-9) and rarely appropriate (1-3) ranges for any scenario (i.e.,  $\geq 4$  members' ratings fell between 1-3 and  $\geq 4$  members' ratings fell between 7-9 on any given scenario and its treatment). If there is still disagreement in the voting panel ratings after the last round of voting, that voting item is labeled as "5" regardless of median score. Agreement is defined as  $\leq 3$  panelists rated outside of the 3-point range containing the median.

See Table 3 in the original guideline document for additional information on final ratings.

## Rating Scheme for the Strength of the Recommendations

Not applicable

## Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed. While cost is often a relevant consideration, panelists focused their appropriateness ratings on the effectiveness treatments of osteoarthritis of the hip.

## Method of Guideline Validation

Internal Peer Review

## Description of Method of Guideline Validation

The American Academy of Orthopaedic Surgeons (AAOS) Appropriate Use Criteria (AUC) Section, the AAOS Council on Research and Quality, and the AAOS Board of Directors sequentially approved the Appropriate Use Criteria for Management of Osteoarthritis of the Hip.

## Evidence Supporting the Recommendations

### Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

This Appropriate Use Criteria (AUC) for Management of Osteoarthritis of the Hip is based on a review of the available literature and a list of clinical scenarios (i.e., criteria) constructed and voted on by experts in orthopaedic surgery and other relevant medical fields.

## Benefits/Harms of Implementing the Guideline Recommendations

### Potential Benefits

The benefits of surgical treatment of osteoarthritis of the hip include relief of pain and improved function. Most invasive operative treatments, primarily arthroplasty, are associated with known risks.

### Potential Harms

Early postoperative complications include periprosthetic infection, venous thromboembolic disease, dislocation, fracture, and pain. Late postoperative complications include infection, aseptic component loosening, and pain. All can lead to a need for revision arthroplasty.

## Contraindications

## Contraindications

Contraindications are relative and require an in depth discussion with the patient and physician (surgeon, anesthesiologist) about their individual risk factors. Additional factors, such as the individual's comorbidities, and/or specific patient characteristics may affect the physician's choice of treatment.

Clinician input based on experience increases the probability of identifying patients who will benefit from specific treatment options. The individual patient and/or their decision surrogate dynamic will also influence treatment decisions, therefore, discussion of available treatments and procedures applicable to the individual patient rely on mutual communication between the patient and/or decision surrogate and physician, weighing the potential risks and benefits for that patient. Once the patient and/or their decision surrogate have been informed of available therapies and have discussed these options with the patient's physician, an informed and shared decision can be made.

## Qualifying Statements

### Qualifying Statements

- Volunteer physicians from multiple medical specialties created and categorized these Appropriate Use Criteria. These Appropriate Use Criteria are not intended to be comprehensive or a fixed protocol, as some patients may require more or less treatment or different means of diagnosis. These Appropriate Use Criteria represent patients and situations that clinicians treating or diagnosing musculoskeletal conditions are most likely to encounter. The clinician's independent medical judgment, given the individual patient's clinical circumstances, should always determine patient care and treatment.
- These criteria should not be construed as including all indications or excluding indications reasonably directed to obtaining the same results. The criteria intend to address the most common clinical scenarios facing all appropriately trained surgeons and all qualified physicians managing patients under consideration for surgically treating osteoarthritis of the hip. The ultimate judgment regarding any specific criteria should address all circumstances presented by the patient and the needs and resources particular to the locality or institution. It is also important to state that these criteria were developed as guidelines and are not meant to supersede clinician expertise and experience or patient preference.
- Some drugs or medical devices referenced or described in this document may not have been cleared by the Food and Drug Administration (FDA) or may have been cleared for a specific use only. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or device he or she wishes to use in clinical practice.

## Implementation of the Guideline

### Description of Implementation Strategy

#### Disseminating Appropriate Use Criteria

All American Academy of Orthopaedic Surgeons (AAOS) Appropriate Use Criteria (AUCs) can be accessed via a user-friendly app that is available via the OrthoGuidelines Web site ([www.orthoguidelines.org/auc](http://www.orthoguidelines.org/auc)) or as a native app via the Apple and Google Play stores.

Publication of the AUC document is on the AAOS Web site at <http://www.aaos.org/auc>. This document provides interested readers with full documentation about the development of AUC and further details of the criteria ratings.

AUCs are first announced by an Academy press release and then published on the AAOS Web site. AUC

summaries are published in the *AAOS Now* and the *Journal of the American Academy of Orthopaedic Surgeons* (*JAAOS*). In addition, the Academy's Annual Meeting showcases the AUCs on Academy Row and at Scientific Exhibits.

The dissemination efforts of AUC include Web-based mobile applications, webinars, and online modules for the Orthopaedic Knowledge Online Web site, radio media tours, and media briefings. In addition AUCs are also promoted in relevant Continuing Medical Education (CME) courses and distributed at the AAOS Resource Center.

Other dissemination efforts outside of the AAOS include submitting AUCs to the National Guideline Clearinghouse and to other medical specialty societies' meetings.

## Implementation Tools

### Mobile Device Resources

For information about availability, see the *Availability of Companion Documents and Patient Resources* fields below.

## Institute of Medicine (IOM) National Healthcare Quality Report Categories

### IOM Care Need

Getting Better

### IOM Domain

Effectiveness

Patient-centeredness

## Identifying Information and Availability

### Bibliographic Source(s)

American Academy of Orthopaedic Surgeons (AAOS). American Academy of Orthopaedic Surgeons appropriate use criteria for the management of osteoarthritis of the hip. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2017 Dec 8. 162 p. [4 references]

### Adaptation

Not applicable: The guideline was not adapted from another source.

### Date Released

2017 Dec 8

# Guideline Developer(s)

American Academy of Orthopaedic Surgeons - Medical Specialty Society

## Source(s) of Funding

The American Academy of Orthopaedic Surgeons exclusively funded development of these Appropriate Use Criteria. The American Academy of Orthopaedic Surgeons received no funding from outside commercial sources to support the development of these Appropriate Use Criteria.

## Guideline Committee

Appropriate Use Criteria for the Management of Osteoarthritis of the Hip Writing Panel

## Composition of Group That Authored the Guideline

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## Financial Disclosures/Conflicts of Interest

In accordance with American Academy of Orthopaedic Surgeons policy, all individuals whose names appear as authors or contributors to this document filed a disclosure statement as part of the submission process. All authors provided full disclosure of potential conflicts of interest prior to participation in the development of these Appropriate Use Criteria. Disclosure information for all panel members can be found in Appendix B in the original guideline document.

## Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

## Guideline Availability

Available from the [American Academy of Orthopaedic Surgeons \(AAOS\) Web site](#) [REDACTED] and the [OrthoGuidelines Web site](#) [REDACTED].

## Availability of Companion Documents

The following are available:

American Academy of Orthopaedic Surgeons management of osteoarthritis of the hip evidence-based clinical practice guideline. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS); 2017 Mar 13. 854 p. Available from the [American Academy of Orthopaedic Surgeons \(AAOS\) Web site](#) [REDACTED].

AAOS Appropriate Use Criteria methodology. Rosemont (IL): American Academy of Orthopaedic Surgeons (AAOS). 11 p. Available from the [AAOS Web site](#) [REDACTED].

A mobile app for the appropriate use criteria for the management of osteoarthritis of the hip is available on the [AAOS Web site](#) [REDACTED].

## Patient Resources

None available

## NGC Status

This NGC summary was completed by ECRI Institute on May 7, 2018. The information was verified by the guideline developer on June 4, 2018.

This NEATS assessment was completed by ECRI Institute on May 10, 2018. The information was verified by the guideline developer on June 4, 2018.

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